

AD-A100 556 ARMY ELECTRONICS RESEARCH AND DEVELOPMENT COMMAND WS--ETC F/G 4/2  
19304A MLRS, MISSILE NUMBERS V02-001, V01-003, V01-004, ROUND N--ETC(U)  
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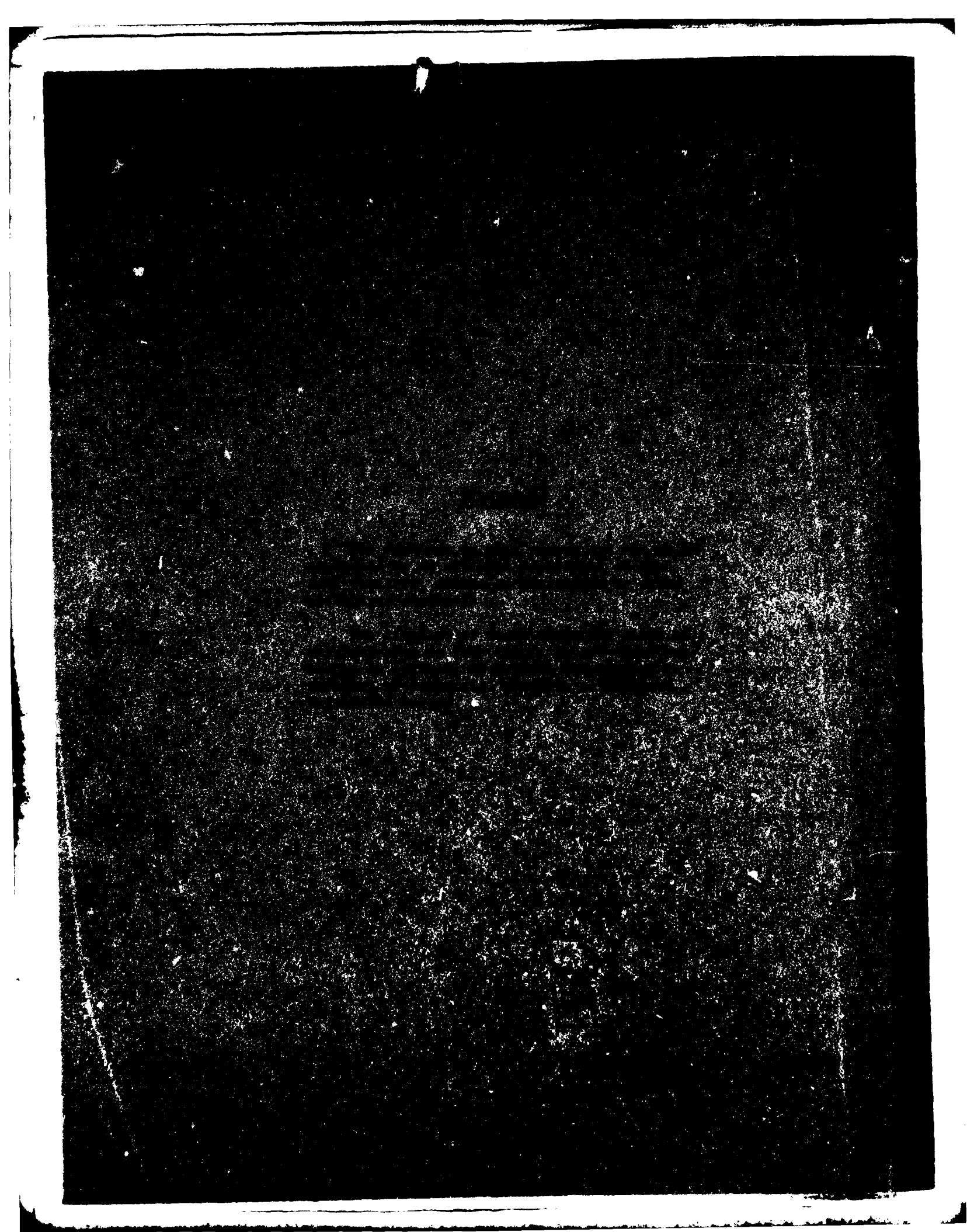
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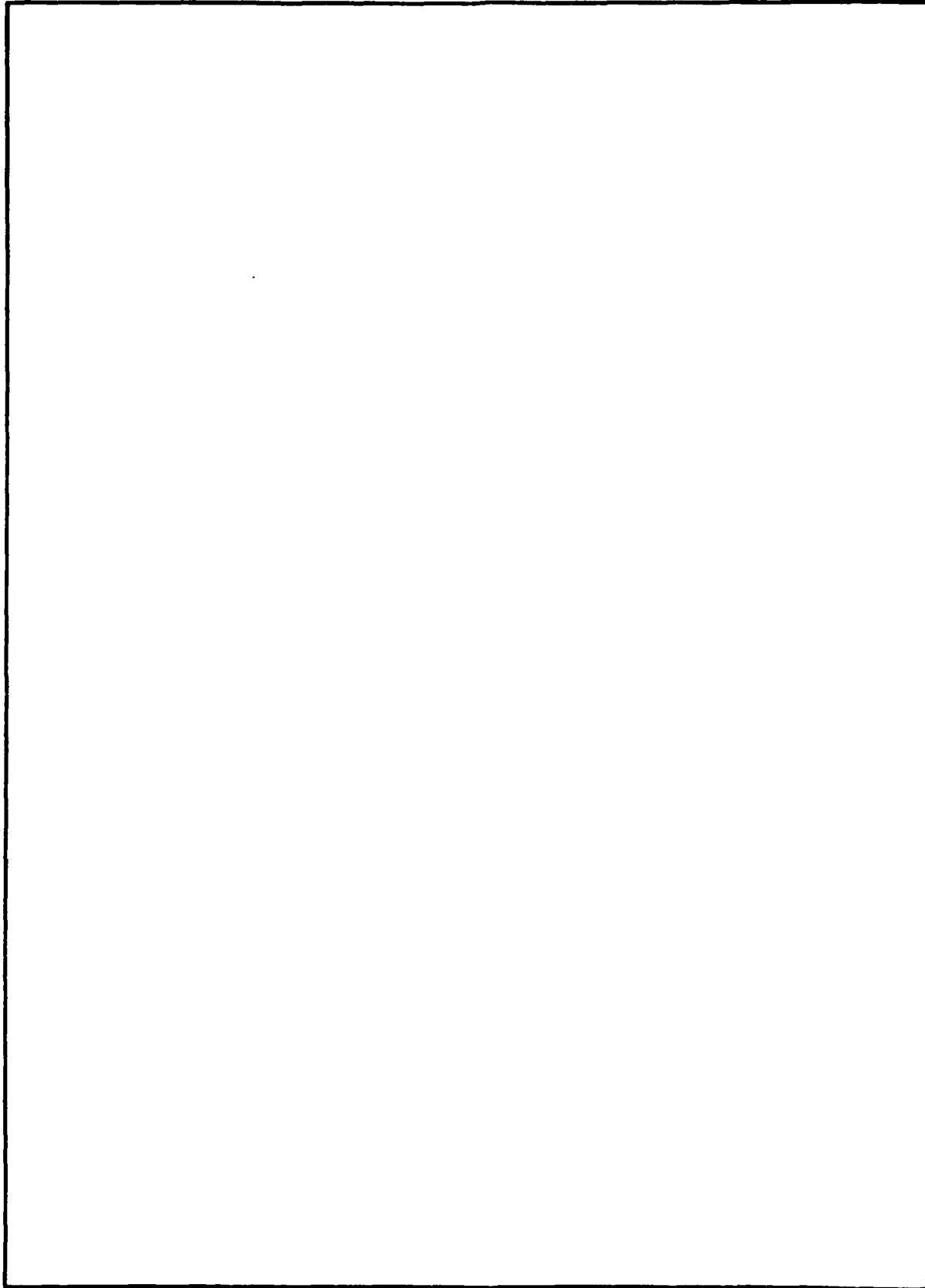
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20. ABSTRACT (Continue on reverse side if necessary and identify by block number) Meteorological data gathered for the launching of the 19304A MLRS, Missile Numbers V02-001, V01-003, and V01-004, Round Numbers V-143/MD-10, V-144/MD-11, and V-145/MD-12 presented in tabular form.		

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## INTRODUCTION

19304D MLRS, Missile Numbers V02-001, V01-003, and V01-004, Round Numbers V-143/MD-10, V-144/MD-11, and V-145/MD-12, were launched from LC-33, White Sands Missile Range (WSMR), New Mexico, at 1036:39, 1036:43, and 1036:48 MDT, 19 May 1981. The scheduled launch times were 1030, 1030:04.5, and 1030:09.

## DISCUSSION

Meteorological data were recorded and reduced by the White Sands Meteorological Team, Atmospheric Sciences Laboratory (ASL), White Sands Missile Range, New Mexico. The data were obtained by the following methods:

### 1. Observations

#### a. Surface

(1) Standard surface observations to include pressure, temperature ( $^{\circ}$ C), relative humidity, dew point ( $^{\circ}$ C), density (gm/m<sup>3</sup>), wind direction and speed, and cloud cover were made at the LC-33 Met Site at T-0 minutes.

(2) Anemometer data were provided from existing pole-mounted and tower-mounted anemometers at LC-33. Monitor of wind speed and direction from one anemometer was also provided in the launch control room.

#### b. Upper Air

(1) Low level wind data were obtained from RAPTS T-9 pibal observations at:

### SITE AND ALTITUDE

LC-36 2 KM  
NICK 2 KM

(2) Air structure data (rawinsonde) were collected at the following Met Sites.

### SITE AND TIME

WSD 0730 MDT  
LC-37 0830 MDT  
WSD 0930 MDT  
LC-37 1037 MDT

Accession For	
NTIS CR-81	
DATA FILE	
Upper Level	
Justification	
By	
Distribution	
Availability Codes	
Avail and/or	
List	Special
A	

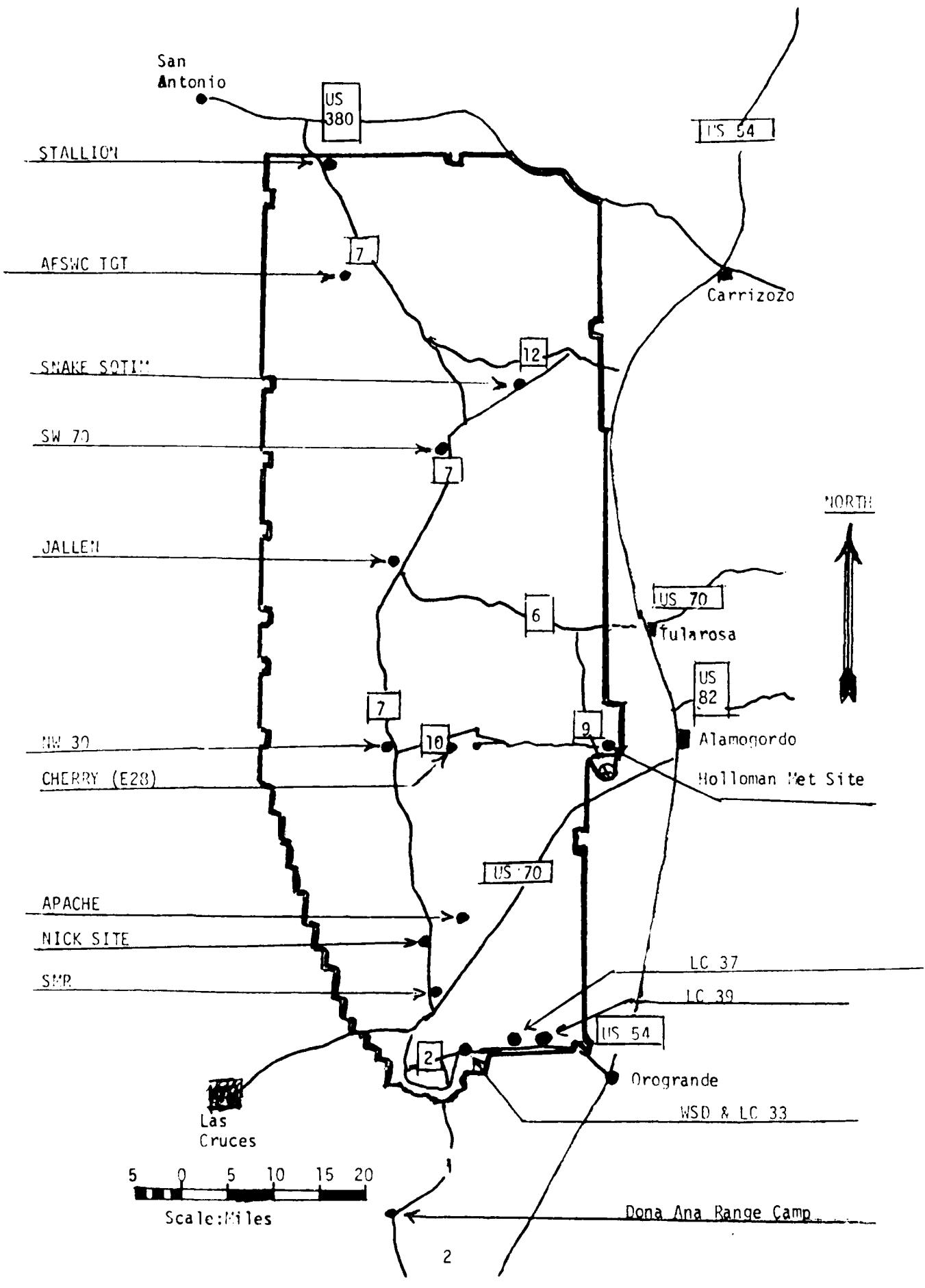


TABLE 1. Surface Observations taken at 1037 MDT,  
 19 May 1981, at LC-33, 19304A MLRS,  
 Missile No. V02-001, V01-003, V01-004,  
 Round No. V-143/MD-10, V-144/MD-11,  
 V-145/MD-12.

EL E V A T I O N	3983.00	FT/M
P R E S S U R E	882.5	MB
T E M P E R A T U R E	18.9	°C
R E L A T I V E H U M I D I T Y	38	
D E W P O I N T	4.2	°C
D E N S I T Y	1047	GM/M <sup>3</sup>
W I N D S P E E D	10	KTS
W I N D D I R E C T I O N	155	DEGREES
C L O U D C O V E R	C L E A R	

TABLE 2 LC-33 FIXED POLE ANEMOMETER MEASURED WINDS  
1037 MDT  
19 May 1981

POLE #1			POLE #2			POLE #3		
T-TIME SEC	DIR DEG	SPEED KTS	T-TIME SEC	DIR DEG	DIR DEG	T-TIME SEC	DIR DEG	SPEED KTS
T-30	140	12	T-30	150	09	T-30	153	09
T-20	119	11	T-20	127	09	T-20	130	09
T-10	136	10	T-10	141	09	T-10	153	10
T0.0	132	12	T0.0	129	10	T0.0	166	09
T+10	146	13	T+10	142	11	T+10	153	13

TABLE 3 LC-33 METEOROLOGICAL TOWER ANEMOMETER MEASURED WINDS (202 FT TOWER)

LEVEL #1, 12 FEET X484,982.64, Y185,057.73, H3923.00 (base)			LEVEL #2, 60 FEET X484,982.64, Y185,057.73, H3923.00 (base)		
T-TIME SEC	DIR DEG	SPEED KTS	T-TIME SEC	DIR DEG	SPEED KTS
T-30	159	15	T-30	151	17
T-20	145	13	T-20	151	16
T-10	150	15	T-10	152	16
T0.0	149	17	T0.0	149	16
T+10	153	10	T+10	152	15

LEVEL #3, 102 FEET X484,982.64, Y185,057.73, H3923.00 (base)			LEVEL #4, 202 FEET X484,982.64, Y185,057.73, H3923.00 (base)		
T-TIME SEC	DIR DEG	SPEED KTS	T-TIME SEC	DIR DEG	SPEED KTS
T-30	151	19	T-30	142	18
T-20	147	17	T-20	142	17
T-10	147	17	T-10	141	16
T0.0	146	15	T0.0	139	17
T+10	145	15	T+10	142	17

TABLE 4

## T-TIME PILOT-BALLOON MEASURED WIND DATA

DATE 19 May 1981

SITE: LC-36  
 TIME: 1037 MDT  
 WSTM COORDINATES:  
 X= 504,465.56  
 Y= 190,780.55  
 H= 4040.71

SITE: NICK  
 TIME: 1045 MDT  
 WSTM COORDINATES:  
 X= 470,734.56  
 Y= 255,775.64  
 H= 4126.57

LAYER MIDPOINT METERS ASL	DIRECTION DEGREES	SPEED KNOTS	LAYER MIDPOINT METERS ASL	DIRECTION DEGREES	SPEED KNOTS
SURFACE	155	09	SURFACE	150	10
150	157	09	150	185	18
210	148	11	210	175	22
270	154	13	270	170	20
330	154	14	330	175	15
390	155	15	390	165	18
500	149	14	500	165	20
650	143	17	650	175	21
800	139	22	800	175	22
950	145	16	950	160	25
1150	148	10	1150	160	21
1350	165	17	1350	180	18
1550	178	17	1550	200	11
1750	193	10	1750	205	08
2000	192	11	2000	MISG	

Wind data obtained from RAPTS T-9 radar Tracked Pilot-Balloon observation.

TABLE 5

AIMING AND T-TIME MET MESSAGES  
19 May 1981

WSD 0730 MDT	LC-37 0830 MDT
METCM1324064	METCM1324063
191350122882	191450124881
00329005 28910882	00249009 29090881
01302009 28790872	01237013 28830871
02245013 28520846	02225018 28570845
03238023 28350806	03234022 28350806
04313018 28350759	04302017 28340759
05382014 28280715	05372011 28290714
06411015 27910673	06383014 27900672

WSD 0930 MDT	LC-37 1037 MDT
METCM1324064	METCM1324063
191530122883	191660124881
00213018 29170883	00196008 29370881
01258027 29040872	01190020 29180870
02240016 28740847	02244014 28910845
03257018 28370807	03254015 28520806
04298016 28290760	04308017 28470759
05355012 28350716	05343013 28380715
06356016 27960674	06337020 27950673

STATION ALTITUDE 3989.00 FEET MSL  
 19 MAY 81  
 ASCENSION NO. 345

SIGNIFICANT LEVEL DATA  
 1390021345  
 WHITE SANDS

GEODETIC COORDINATES  
 32.40043 LAT DEG  
 106.37033 LON DEG

TABLE 6

PRESSURE MILLIBARS	GEOMETRIC ALTITUDE MSL FEET	TEMPERATURE DEGREES CENTIGRADE	REL.HUM. PERCENT
AIR	DEWPNT	CENTIGRADE	
882.1	3989.0	15.1	44.0
850.0	5013.3	11.4	46.0
809.4	6351.3	9.1	52.0
771.6	7656.7	10.5	40.0
743.0	8686.9	8.8	57.0
733.6	9034.0	10.3	31.0
706.0	10310.7	8.2	35.0
651.2	12254.1	3.2	42.0
624.2	13377.2	5.5	51.0
598.4	14487.0	-1.4	23.0
506.0	19092.5	-12.8	21.0
464.8	20907.4	-17.5	20.0
441.0	22197.7	-19.3	17.0
400.0	24557.3	-25.2	18.0
382.6	25617.1	-26.7	17.0
341.2	28303.2	-33.0	18.0
321.6	29661.0	-37.2	

STATION ALTITUDE 3989.60 FEET MSL  
19 MAY 81  
ASCENSION NO. 345

UPPER AIR DATA  
1390020345  
WHITE SANDS  
MSL FLEET

TABLE 7

GEOMETRIC ALTITUDE MSL FLEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEPOINT DEGREES CENTIGRADE	REL HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA DIRECTION DEGREES (TN)	INDEX OF REFRACTION
5989.0	882.1	15.1	44.0	1062.6	662.5	185.0	5.1
4000.0	881.7	15.1	44.0	1062.3	662.4	184.4	5.1
4500.0	865.9	13.3	45.0	1050.1	660.3	164.2	7.3
5000.0	850.4	11.4	46.0	1038.1	658.1	154.1	10.0
5500.0	835.0	10.6	48.2	1022.4	657.1	148.3	12.8
6000.0	819.9	9.7	50.4	1006.9	656.1	144.7	15.7
6500.0	803.0	9.3	50.6	990.2	655.6	142.2	18.7
7000.0	790.4	9.8	46.0	970.5	655.2	148.2	18.9
7500.0	776.0	10.3	-2.2	41.4	951.2	656.8	157.5
8000.0	762.0	9.9	-3.4	39.0	935.4	655.2	167.0
8500.0	748.1	9.1	-4.6	37.5	921.3	655.2	176.7
9000.0	734.5	10.2	-5.9	31.6	901.4	656.4	188.9
9500.0	721.2	9.5	-6.1	32.5	886.9	655.7	203.4
10000.0	708.0	8.7	-6.2	34.0	873.3	654.7	212.2
10500.0	695.1	7.7	-6.5	35.7	860.4	653.6	220.9
11000.0	682.3	6.4	-7.0	37.5	848.5	652.0	227.1
11500.0	669.7	5.1	-7.6	39.3	836.7	650.5	225.9
12000.0	657.4	3.9	-8.1	41.1	825.2	649.0	203.4
12500.0	645.2	2.6	-8.4	44.0	813.5	647.5	212.2
13000.0	633.1	1.4	-8.4	48.0	801.8	646.1	227.4
13500.0	621.3	.3	-9.4	47.9	790.1	644.8	229.4
14000.0	609.6	-.6	-14.0	35.3	778.1	643.6	231.6
14500.0	598.1	-1.4	-19.8	23.0	766.2	642.4	225.0
15000.0	586.5	-2.7	-21.0	22.8	754.9	640.9	237.9
15500.0	575.2	-3.9	-22.2	22.6	743.8	639.5	240.0
16000.0	564.1	-5.1	-23.3	22.3	732.8	638.0	241.2
16500.0	553.2	-6.4	-21.5	22.1	722.0	636.5	242.3
17000.0	542.5	-7.6	-25.6	21.9	711.4	635.0	242.4
17500.0	532.0	-8.9	-26.8	21.7	701.0	633.5	242.2
18000.0	521.8	-10.1	-28.0	21.5	690.7	632.0	241.9
18500.0	511.7	-11.3	-29.1	21.3	680.6	630.5	241.6
19000.0	501.8	-12.6	-30.3	21.0	670.6	629.0	241.1
19500.0	491.9	-13.9	-31.5	20.8	660.6	627.4	240.7
20000.0	482.1	-15.2	-32.7	20.5	650.7	625.8	241.2
20500.0	472.5	-16.4	-34.0	20.2	641.0	624.3	242.5
21000.0	462.0	-17.6	-35.2	19.8	631.1	622.8	243.8
21500.0	453.7	-18.3	-36.4	18.6	620.1	622.0	244.7
22000.0	444.6	-19.0	-37.6	17.5	609.3	621.1	245.1
22500.0	435.5	-20.1	-38.6	17.1	599.4	619.8	245.5
23000.0	426.6	-21.3	-39.6	17.3	590.0	618.3	245.8

GEODETIC COORDINATES  
32°40'04.3 LAT DEG  
106°37'03.3 LONG DEG

STATION ALTITUDE 3,989.00 FEET MSL  
 19 MAY 81 0730 IRS MD  
 ASCENSION NO. 345

UPPER AIR DATA  
 1390020345  
 WHITE SANDS  
 MSL

TABLE 7 CON'T

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE DEGREES CENTIGRADE	AIR DEWPOINT DEGREES CENTIGRADE	REL.HUM. PERCENT	GM/CURIC METER	SOUND KNOTS	WIND DATA DIRECTION DEGREES(TN)	SPEED KNOTS	INDEX OF REFRACTION
23500.0	417.9	-22.6	-40.5	17.6	580.8	616.8	245.8	29.4	1.000130
24000.0	409.3	-23.8	-41.4	17.8	571.8	615.2	245.8	28.6	1.000128
24500.0	400.9	-25.1	-42.4	18.0	562.9	613.7	245.9	27.8	1.000126
25000.0	392.6	-25.8	-43.2	17.6	553.0	612.7	247.0	27.2	1.000124
25500.0	384.5	-26.5	-44.1	17.1	543.1	611.8	248.2	26.5	1.000122
26000.0	376.4	-27.6	-45.0	17.1	533.9	610.5	249.5	25.9	1.000120
26500.0	368.5	-28.8	-45.8	17.3	525.2	609.0	250.1	24.7	1.000118
27000.0	360.7	-29.9	-46.7	17.5	516.6	607.6	250.6	23.3	1.000116
27500.0	353.1	-31.1	-47.6	17.7	508.2	606.1	251.2	21.9	1.000114
28000.0	345.6	-32.3	-48.5	17.9	499.9	604.6			1.000112
28500.0	338.3	-33.6	-50.9	15.4**	491.9	603.0			1.000110
29000.0	331.0	-35.2	-56.8	8.8**	484.5	601.0			1.000108
29500.0	323.9	-36.7	-68.5	2.1**	477.2	599.1			1.000106

\*\* AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.

STATION ALTITUDE 3989.00 FEET MSL  
19 MAY 31 0730 HRS MDT  
ASCENSION NO. 345

MANDATORY LEVELS  
1390020343  
WHITE SANDS

TABLE 8

GEODETIC COORDINATES  
32°40.043 LAT DEG  
106.37053 LON DEG

PRESSURE MILLIBARS	GEOPOTENTIAL FEET	TEMPERATURE DEGREES	AIR DEPOINT CENTIGRAVE	KEL.HUM. PERCENT	WIND DATA DIRECTION DEGREES (TN)	WIND SPEED KNOTS
850.0	5010.	11.4	.2	46.	153.9	10.0
800.0	6664.	9.4	-.7	49.	142.3	19.4
750.0	8424.	9.2	-4.4	38.	175.2	17.1
700.0	10301.	8.2	-6.3	35.	217.5	14.5
650.0	12290.	3.1	-8.4	42.	224.5	20.0
600.0	14400.	-1.3	-18.8	25.	234.2	26.3
550.0	16652.	-6.8	-24.8	22.	242.0	28.6
500.0	19066.	-12.8	-30.5	21.	261.0	32.6
450.0	21670.	-18.6	-36.9	18.	244.8	32.6
400.0	24516.	-25.2	-42.5	16.	245.9	27.8
350.0	27661.	-31.6	-48.0	16.	251.4	21.4

STATION ALTITUDE 4051.37 FEET MSL  
 19 MAY 81 0800 HRS MDT  
 ASCENSION NO. 92

SIGNIFICANT LEVEL DATA  
 1390180092  
 LC-37

TABLE 9

GEODETIC COORDINATES  
 32°40'17" LAT DEG  
 106°31'23" LON DEG

PRESSURE GEOMETRIC MILLIBARS	GEOMETRIC ALTITUDE METERS MSL FEET	TEMPERATURE DEGREES CENTIGRADE	AIR DEWPOINT DEGREES CENTIGRADE	REL.HUM. PERCENT
881.0	4051.4	16.8	3.1	40.0
873.2	4299.1	14.3	1.6	42.0
850.0	5043.0	12.1	1.4	48.0
814.2	6221.0	9.1	.0	53.0
774.6	7580.3	9.8	-2.2	43.0
755.4	8264.1	8.8	-3.4	42.0
736.4	8959.1	10.7	-6.1	30.0
700.0	10340.1	8.0	-6.1	36.0
617.4	13693.8	-5	-7.7	58.0
608.6	14071.3	-5	-11.2	44.0
591.2	14831.1	-2.5	-13.3	43.0
565.6	15980.8	-4.9	-24.3	20.0
523.8	17947.8	-9.6	-26.3	24.0
500.0	19121.0	-13.1	-28.1	27.0
451.4	21651.2	-19.7	-31.2	35.0
443.8	22065.8	-19.9	-37.5	19.0
414.0	23753.2	-22.6	-40.8	17.0
400.0	24580.1	-24.9	-42.8	17.0
392.4	25039.1	-25.0	-43.4	16.0
336.4	28658.1	-33.7	-50.2	17.0
304.2	30950.2	-40.1		

SATION ALTITUDE 4051.37 FEET MSL  
19 MAY 81 0830 HRS MDT  
ASCENSION NO. 92

UPPER AIR DATA  
139n180n92  
LC-37  
TABLE 10

GEODETIC COORDINATES  
32°40'17" LAT UEG  
106°31'23" LON UEG

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES CENTIGRADE	REL.HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DIRECTION DEGREES (TN)	INDEX OF REFRACTION
4051.4	881.3	16.8	3.1	40.0	1055.0	664.5	140.0
4500.0	860.9	13.7	1.6	43.6	1049.6	660.8	133.7
5000.0	851.3	12.2	1.5	47.7	1036.1	659.1	129.6
5500.0	835.9	10.9	0.9	49.9	1022.0	657.6	127.1
6000.0	820.8	9.7	0.3	52.1	1008.1	656.1	127.5
6500.0	805.9	9.2	-0.4	50.9	991.4	655.6	134.1
7000.0	791.3	9.5	-1.2	47.3	972.6	655.8	143.0
7500.0	776.9	9.8	-2.0	43.6	954.2	656.1	155.5
8000.0	762.8	9.2	-2.9	42.4	938.8	655.4	165.3
8500.0	746.9	9.4	-4.2	37.9	921.1	655.6	173.6
9000.0	735.3	10.6	-6.1	30.2	900.9	656.9	184.7
9500.0	721.9	9.6	-6.1	32.4	887.5	656.8	201.1
10000.0	708.8	8.7	-6.1	34.5	874.4	654.7	209.6
10500.0	695.8	7.6	-6.1	37.0	861.6	653.4	215.4
11000.0	682.9	6.3	-6.2	40.3	849.4	652.0	215.4
11500.0	670.3	5.1	-6.3	43.6	837.5	650.5	214.6
12000.0	657.8	3.8	-6.5	46.9	825.7	649.0	211.2
12500.0	645.6	2.5	-6.8	50.2	814.1	647.5	208.8
13000.0	633.6	1.3	-7.1	53.4	802.7	646.0	210.2
13500.0	621.9	-0	-7.6	56.7	791.5	644.5	212.5
14000.0	610.3	-5	-10.5	46.6	778.4	643.8	218.7
14500.0	598.7	-1.6	-12.4	43.4	767.0	642.4	223.8
15000.0	587.4	-2.9	-14.6	39.6	756.1	640.9	227.8
15500.0	576.2	-3.9	-10.0	29.6	744.8	639.5	230.7
16000.0	565.2	-4.9	-24.4	20.0	733.7	638.2	231.6
16500.0	554.3	-6.1	-24.8	21.1	722.7	636.8	232.8
17000.0	543.5	-7.3	-25.3	22.1	712.0	635.3	234.4
17500.0	533.0	-8.5	-25.8	23.1	701.4	633.9	235.4
18000.0	522.7	-9.8	-26.4	24.1	691.0	632.4	236.0
18500.0	512.5	-11.2	-27.1	25.4	681.3	630.6	235.6
19000.0	502.4	-12.7	-27.9	26.7	671.8	628.8	234.8
19500.0	492.4	-14.1	-28.5	28.2	661.8	627.2	234.0
20000.0	482.5	-15.4	-29.1	29.8	651.9	625.6	234.6
20500.0	472.9	-16.7	-29.7	31.4	642.1	624.0	236.2
21000.0	463.4	-18.0	-30.3	32.9	632.5	622.4	237.7
21500.0	454.2	-19.3	-31.0	34.5	623.0	620.8	239.8
22000.0	445.0	-19.9	-36.2	21.5	611.9	620.1	242.2
22500.0	435.9	-20.6	-38.4	18.5	601.2	619.2	244.6
23000.0	427.0	-21.4	-39.3	17.9	590.8	618.2	246.7
23500.0	418.3	-22.2	-40.3	17.3	580.6	617.2	247.0

STATION ALTITUDE 4051.37 FEET MSL  
19 MAY 81 0830 IRS MDI  
ASCENSION NO. 92

UPPER AIR DATA  
1390180092  
LC-37  
TABLE 10 CON'T

GEOGRAPHIC ALTITUDE METERS MSL FEET	PRESSURE MILLIBARS	TEMPERATURE DEGREES CENTIGRADE	REL.HUM. PERCENT	SOUND METER GM/CURIC KNOTS	SPEED OF WIND DATA DEGREES (IN) DIRECTION KNOTS	INDEX OF REFRACTION
24000.0	409.8	-23.3	-41.4	17.0	571.2	247.9
24500.0	401.3	-24.7	-42.6	17.0	562.6	249.6
25000.0	393.0	-25.0	-43.4	16.1	551.7	252.2
25500.0	384.8	-26.1	-44.3	16.1	542.5	254.1
26000.0	376.7	-27.3	-45.2	16.3	533.7	254.1
26500.0	368.8	-28.5	-46.1	16.4	525.1	252.1
27000.0	361.0	-29.7	-47.1	16.5	516.5	249.9
27500.0	353.4	-30.9	-48.0	16.7	508.2	247.4
28000.0	346.0	-32.1	-48.9	16.8	500.0	247.8
28500.0	338.7	-33.3	-49.9	17.0	491.9	250.3
29000.0	331.4	-34.7	-52.3	14.5**	484.0	256.7
29500.0	324.2	-36.1	-55.9	10.8**	476.3	265.7
30000.0	317.2	-37.4	-60.3	7.0**	468.7	265.2
30500.0	310.3	-38.8	-66.9	3.3**	461.3	268.1
					596.3	1.000103

\*\* AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.

STATION ALTITUDE 4051.37 FEET MSL  
19 MAY 81 0830 HRS MDT  
ASCENSION NO. 92

MANDATORY LEVELS  
1390180092  
LC-37  
TABLE 11

GEODETIC COORDINATES  
32°40'17.5" LAT DEG  
106°31'23.2" LON DEG

PRESSURE MILLIBARS	GEOPOTENTIAL FEET	TEMPERATURE AIR DEGREES	DEWPOINT CENTIGRADE	REL. HUM. PERCENT	WIND DATA DIRECTION DEGREES (TN)	WIND SPEED KNOTS
850.0	5039.	12.1	1.4	48.	129.4	16.0
800.0	6695.	9.3	-0.7	49.	136.8	21.0
750.0	8452.	9.3	-4.0	39.	172.8	16.5
700.0	10330.	8.0	-6.1	36.	213.5	12.0
650.0	12318.	3.0	-6.7	49.	209.4	16.9
600.0	14428.	-1.5	-12.3	44.	223.3	29.7
550.0	16680.	-6.6	-25.0	21.	233.4	28.0
500.0	19094.	-13.1	-28.1	27.	234.7	30.3
450.0	21694.	-19.7	-32.1	32.	240.6	32.6
400.0	24539.	-24.9	-42.8	17.	249.9	26.8
350.0	27608.	-31.5	-48.4	17.	248.9	20.6

STATION ALTITUDE 3989.00 FEET MSL  
19 MAY 81 0930 HRS MDT  
ASCENSION NO. 346

SIGNIFICANT LEVEL DATA  
1390020340  
WHITE SANDS

GEODETIC COORDINATES  
32.40043 LAT DEG  
106.37033 LON DEG

TABLE 12

PRESSURE MILLIBARS	GEOMETRIC ALTITUDE MSL FEET	TEMPERATURE DEGREES CENTIGRADE	AIR DEWPOINT DEGREES CENTIGRADE	REL. HUM. PERCENT
882.7	3989.0	17.7	4.3	41.0
850.0	5041.1	13.4	4.3	54.0
785.6	7198.1	7.5	1.1	64.0
776.2	7524.7	8.4	.9	59.0
757.4	8190.8	8.2	.4	58.0
748.4	8515.5	8.3	-.7	53.0
739.0	8860.7	11.3	-.2	45.0
700.0	10341.1	8.2	-2.4	47.0
639.6	12765.6	2.4	-6.4	52.0
622.2	13496.7	.7	-5.5	63.0
605.0	14235.3	-1.0	-6.9	64.0
530.0	17657.0	-9.2	-19.2	44.0
500.0	19129.2	-12.9	-22.1	46.0
466.8	20639.3	-17.0	-27.3	40.0
443.6	22095.0	-18.2	-30.1	34.0
401.0	24604.2	-24.9	-35.9	35.0
385.0	25492.2	-25.9	-37.0	34.0
324.4	29515.1	-36.1	-46.2	34.0

STATION ALTITUDE 3989.00 FEET MSL  
19 MAY 81 0930 HRS MDT  
ASCENSION NO. 346

UPPER AIR DATA  
1390020346  
WHITE SANDS

TABLE 13

GEOGRAPHIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE DEGREES CENTIGRADE	AIR DEWPOINT CENTIGRADE	REL.HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	DIRECTION DEGREES (TN)	WIND DATA KNOTS	INDEX OF REFRACTION
3989.0	882.7	17.7	4.3	41.0	1053.5	665.6	120.0	18.1	1.000272
4000.0	832.4	17.7	4.3	41.1	1053.2	665.5	120.1	18.1	1.000272
4500.0	866.7	15.6	4.4	47.3	1041.7	665.2	124.8	17.5	1.000270
5000.0	851.3	13.6	4.3	53.5	1030.5	660.9	129.8	17.0	1.000268
5500.0	835.9	12.1	3.7	56.1	1017.0	659.2	135.0	16.7	1.000264
6000.0	820.7	10.6	3.0	58.4	1003.5	657.6	140.3	16.5	1.000259
6500.0	805.9	9.4	2.2	60.8	990.2	656.0	145.8	16.5	1.000255
7000.0	791.3	8.0	1.5	63.1	977.2	654.3	152.0	16.3	1.000250
7500.0	776.9	8.3	.9	59.4	958.5	654.7	159.3	16.1	1.000245
8000.0	762.7	8.3	.6	58.3	941.2	654.6	160.6	16.2	1.000240
8500.0	748.8	8.3	-.6	53.2	924.1	654.5	173.7	15.5	1.000234
9000.0	735.2	11.0	-.4	45.2	898.6	657.7	181.5	14.9	1.000228
9500.0	721.9	10.0	-1.1	45.9	885.7	656.5	189.0	14.6	1.000224
10000.0	704.8	8.9	-1.9	46.5	872.9	655.2	193.4	14.4	1.000220
10500.0	695.9	7.8	-2.7	47.3	860.4	653.9	197.8	14.2	1.000216
11000.0	683.0	6.6	-3.5	48.4	848.3	652.5	200.4	15.4	1.000212
11500.0	670.4	5.4	-4.3	49.4	836.3	651.0	200.7	18.0	1.000208
12000.0	658.1	4.2	-5.1	50.4	824.5	649.6	200.9	20.6	1.000204
12500.0	646.0	3.0	-6.0	51.5	812.9	648.2	202.5	23.2	1.000201
13000.0	634.0	1.9	-6.1	55.5	801.2	646.8	204.3	26.0	1.000198
13500.0	622.1	.7	-5.5	63.0	789.5	645.5	205.7	28.7	1.000196
14000.0	610.4	-.5	-6.5	63.7	778.0	644.1	209.3	29.2	1.000193
14500.0	598.8	-1.6	-7.8	62.5	766.7	642.6	213.0	29.5	1.000188
15000.0	587.4	-2.8	-9.6	59.5	755.5	641.1	216.5	29.9	1.000184
15500.0	576.1	-4.0	-11.3	56.6	744.5	639.6	220.0	29.6	1.000179
16000.0	565.1	-5.2	-13.1	53.7	733.7	638.1	223.5	29.4	1.000175
16500.0	554.3	-6.4	-14.9	50.8	723.0	636.7	226.0	29.5	1.000171
17000.0	543.6	-7.6	-16.7	47.8	712.4	635.2	226.4	30.0	1.000168
17500.0	533.2	-8.8	-18.6	44.9	702.1	635.7	220.9	30.4	1.000164
18000.0	522.9	-10.1	-19.8	44.5	691.7	632.2	227.4	30.9	1.000161
18500.0	512.6	-11.3	-20.8	45.1	681.4	630.7	228.0	31.2	1.000158
19000.0	502.6	-12.6	-21.8	45.8	671.3	629.1	228.0	31.6	1.000155
19500.0	492.6	-13.8	-23.2	44.7	661.2	627.6	230.9	31.1	1.000153
20000.0	482.8	-15.0	-24.7	42.9	651.1	626.2	233.8	30.3	1.000150
20500.0	473.2	-16.2	-26.3	41.2	641.2	624.7	236.8	29.6	1.000147
21000.0	463.8	-17.2	-27.7	39.2	630.8	623.5	240.9	28.3	1.000144
21500.0	454.4	-17.6	-28.8	36.8	619.3	622.9	245.4	27.1	1.000141
22000.0	445.3	-18.1	-29.9	34.5	608.0	622.3	250.3	26.1	1.000138
22500.0	435.3	-19.3	-31.1	34.2	598.4	620.8	252.0	25.8	1.000136
23000.0	427.4	-20.6	-32.2	34.4	589.3	619.2	253.4	25.5	1.000134

STATION ALTITUDE 3489.00 FEET MSL  
 19 MAY 0301 HRS MDT  
 ASCENSION 140. 346

UPPER AIR DATA  
 1390020346  
 WHITE SANDS  
 TABLE 13 CON'T

GEODETIC COORDINATES  
 32.40043 LAT DEG  
 106.37033 LON DEG

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES	DEWPOINT DEGREES	REL.HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DIRECTION DEGREES (TN)	SPEED KNOTS	INDEX OF REFRACTION
23500.0	410.6	-22.0	-33.3	34.6	580.4	617.6	254.7	25.3	1.000131
24000.0	410.1	-23.3	-34.5	34.8	571.6	615.9	253.1	24.7	1.000129
24500.0	401.7	-24.6	-35.6	35.0	562.9	614.2	251.4	24.1	1.000127
25000.0	390.4	-25.3	-36.4	34.6	552.9	613.3	249.8	23.6	1.000125
25500.0	385.3	-25.9	-37.1	34.0	542.7	612.6	249.3	22.7	1.000122
26000.0	377.1	-27.2	-38.2	34.0	534.0	611.1	248.8	21.9	1.000120
26500.0	369.1	-28.5	-39.5	34.0	525.4	609.5			1.000118
27000.0	361.3	-29.7	-40.5	34.0	517.0	607.9			1.000116
27500.0	353.6	-31.0	-41.6	34.0	508.7	606.3			1.000114
28000.0	346.1	-32.3	-42.8	34.0	500.5	604.7			1.000112
28500.0	338.8	-33.5	-43.9	34.0	492.5	603.1			1.000110
29000.0	331.6	-34.8	-45.0	34.0	484.6	601.5			1.000109
29500.0	324.6	-36.1	-46.2	34.0	476.9	599.9			1.000107

STATION ALTITUDE 3989.00 FEET MSL  
10 MAY 01 0930 IRS MDT  
ASCENSION NO. 346

MANDATORY LEVELS  
13900±0340  
WHITE SANDS  
TABLE 14

GEODETIC COORDINATES  
32.40043 LAT DEG  
106.37033 LON DEG

PRESSURE	GEOPOTENTIAL	TEMPERATURE	REL.HUM.	"IND DATA
MILLIBARS	FEET	AIR DEGREE DEGPOINT CENTIGRADE	PERCENT	DIRECTION DEGREES(TN)
850.0	5037.	13.4	4.3	130.2
800.0	6699.	8.9	1.9	148.0
750.0	8450.	8.3	-5	173.1
700.0	10331.	8.2	-2.4	196.4
650.0	12353.	3.4	-5.7	201.8
600.0	14436.	-1.5	-7.7	212.0
550.0	16686.	-6.9	-15.6	29.5
500.0	19102.	-12.9	-22.1	50.
450.0	21709.	-17.9	-29.3	46.
400.0	24563.	-24.9	-35.9	36.
350.0	27712.	-31.6	-42.2	24.0

STATION ALTITUDE 4051.37 FEET MSL  
19 MAY 81 1037 HRS MDT  
ASCENSION NO. 93

SIGNIFICANT LEVEL DATA  
1390180093  
LC-37  
TABLE 15

GEODETIC COORDINATES  
32°40'17.5" LAT DEG  
106°31'23.2" LON DEG

PRESSURE MILLIBARS	GEOMETRIC ALTITUDE FEET	TEMPERATURE DEGREES CENTIGRADE	AIR DEWPOINT CENTIGRADE	REL.HUM. PERCENT
880.9	4051.4	19.5	4.0	36.0
869.6	4414.7	17.4	-2.2	36.0
850.0	5051.6	15.4	2.2	41.0
819.4	6067.1	12.3	1.0	48.0
809.6	6398.1	11.5	1.2	49.0
790.0	7069.3	9.9	-7.9	47.0
770.8	7740.0	8.9	-1.5	48.0
761.2	8081.7	10.0	-2.3	42.0
751.4	8437.0	12.3	-5.2	29.0
741.6	8798.6	12.6	-2.8	34.0
700.0	10378.0	8.3	-5.2	38.0
630.6	13177.6	1.4	-8.9	46.0
613.2	13916.6	-0.1	-7.6	57.0
569.6	15846.2	-3.8	-11.7	54.0
552.4	16640.3	-5.4	-16.3	42.0
527.4	17828.9	-8.5	-18.3	45.0
511.0	18630.9	-11.1	-19.9	48.0
500.0	19179.2	-12.5	-24.4	36.0
470.8	20681.8	-15.6	-35.4	20.0
447.4	21943.1	-17.2	-35.8	18.0
400.0	24665.8	-24.6	-41.5	19.0
332.4	29012.4	-34.6	-49.5	20.0
300.0	31342.9	-40.4		

STATION ALTITUDE 4051.37 FEET MSL  
19 MAY 81 1037 HRS MDT  
ASCENSION NO. 93

UPPER AIR DATA  
1390100093  
LC-37

TABLE 16

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREE CENTIGRADE	REL.HUM. PERCENT	DENSITY GM/CURIC METER	SPEED OF SOUND KNOTS	WIND DATA DIRECTION DEGREES (IN)	INPUT OF REFRACTION
4051.4	880.9	19.5	4.0	1044.9	667.0	110.0	8.0 1.000209
4500.0	860.9	17.1	2.2	36.7	1037.2	664.0	9.2 1.000203
5000.0	851.6	15.6	2.2	40.6	1024.2	663.0	127.5 1.000201
5500.0	830.4	14.0	2.0	44.1	1011.3	661.3	133.3 1.000258
6000.0	821.4	12.5	1.7	47.5	998.5	659.5	137.7 1.000255
6500.0	806.6	11.3	.9	48.7	985.0	658.0	144.6 1.000250
7000.0	792.0	10.1	-.7	47.2	971.5	659.5	156.6 1.000244
7500.0	771.6	9.3	-1.3	47.6	956.6	655.6	165.9 1.000240
8000.0	763.5	9.7	-2.1	43.4	937.8	656.1	173.0 1.000234
8500.0	749.7	12.4	-4.8	29.9	912.8	659.0	177.8 1.000223
9000.0	730.2	12.1	-3.1	34.5	897.0	658.7	182.4 1.000222
9500.0	722.8	10.7	-3.8	35.8	885.0	657.1	185.8 1.000219
10000.0	709.7	9.3	-4.6	37.0	873.3	655.5	188.8 1.000215
10500.0	696.8	8.0	-5.3	38.3	861.5	654.0	190.7 1.000212
11000.0	683.9	6.9	-5.9	39.8	849.4	652.5	190.9 1.000208
11500.0	671.3	5.5	-6.6	41.2	837.4	651.0	189.0 1.000205
12000.0	658.9	4.3	-7.3	42.6	825.6	649.6	189.3 1.000201
12500.0	646.7	3.1	-8.0	44.1	814.1	648.1	191.0 1.000198
13000.0	634.8	1.8	-8.7	45.5	802.7	646.6	194.3 1.000195
13500.0	622.9	.7	-9.3	50.8	790.7	645.4	197.6 1.000193
14000.0	611.2	-.3	-7.8	56.9	778.7	644.2	200.9 1.000191
14500.0	599.7	-1.2	-8.8	56.1	766.7	643.1	203.7 1.000187
15000.0	588.3	-2.2	-9.9	55.3	755.0	641.9	207.2 1.000183
15500.0	577.2	-3.1	-11.0	54.5	743.4	640.7	211.3 1.000179
16000.0	566.2	-4.1	-12.6	51.7	732.0	639.5	215.0 1.000175
16500.0	555.4	-5.1	-15.4	44.1	721.0	638.2	218.6 1.000170
17000.0	544.7	-6.3	-16.9	42.9	710.4	636.7	220.1 1.000167
17500.0	534.2	-7.6	-17.7	44.2	700.2	635.1	221.4 1.000164
18000.0	523.9	-9.1	-18.6	45.6	690.5	633.4	222.1 1.000161
18500.0	513.6	-10.7	-19.6	47.5	681.1	631.5	223.1 1.000159
19000.0	503.6	-12.0	-22.9	39.9	671.4	629.7	224.7 1.000155
19500.0	493.6	-13.2	-26.1	32.6	661.0	628.3	227.1 1.000151
20000.0	483.8	-14.2	-28.9	27.3	650.6	627.0	230.4 1.000148
20500.0	474.2	-15.2	-32.1	21.9	640.3	625.8	234.2 1.000145
21000.0	464.8	-16.0	-34.0	19.5	629.5	624.8	238.7 1.000142
21500.0	455.5	-16.6	-34.9	18.7	616.4	624.0	243.9 1.000140
22000.0	446.4	-17.4	-35.9	18.0	607.7	623.1	249.5 1.000137
22500.0	437.3	-18.7	-36.9	18.2	598.6	621.5	251.9 1.000135
23000.0	428.4	-20.1	-38.0	18.4	589.5	619.8	251.3 1.000133
23500.0	419.6	-21.4	-39.0	18.6	580.7	618.1	248.2 1.000131

STATION ALTITUDE 4051.37 FEET MSL  
 19 MAY 01 1037 HRS UT  
 ASCENSION NO. 93

UPPER AIR DATA  
 139018009J  
 LC-37

TABLE 16 CON'T

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES CENTIGRADE	REL.HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA DIRECTION DEGREES (TN)	INDEX OF REFRACTION
24000.0	411.1	-22.8	-40.1	18.8	571.9	616.5	245.6
24500.0	402.7	-24.1	-41.1	18.9	563.4	614.8	243.1
25000.0	394.3	-25.4	-42.1	19.1	554.4	613.3	245.3
25500.0	386.0	-26.5	-43.0	19.2	545.2	611.9	249.3
26000.0	377.9	-27.7	-43.9	19.3	536.2	610.4	251.0
26500.0	369.9	-28.8	-44.9	19.4	527.4	609.0	252.0
27000.0	362.1	-30.0	-45.8	19.5	518.7	607.5	245.4
27500.0	354.5	-31.1	-46.7	19.7	510.2	606.1	238.2
28000.0	347.0	-32.3	-47.7	19.8	501.9	604.7	238.3
28500.0	339.7	-33.4	-48.6	19.9	493.7	603.2	238.5
29000.0	332.6	-34.6	-49.5	20.0	485.6	601.8	238.9
29500.0	325.3	-35.8	-52.6	15.8**	477.5	600.2	238.0
30000.0	318.3	-37.1	-56.2	11.5**	469.6	598.6	236.2
30500.0	311.3	-38.3	-60.8	7.2**	461.8	597.0	1.000103
31000.0	304.6	-39.5	-68.3	2.9**	454.2	595.4	1.000101

\*\* AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.

STATION ALTITUDE 4051.37 FEET MSL  
 19 MAY 81 10:37 HRS MDT  
 ASCENSION NO. 93

MANDATORY LEVELS  
 1390180093  
 LC-37

TABLE 17

PRESSURE MILLIBARS	GEOPOTENTIAL FEET	TEMPERATURE DEGREES	REL. HUM. PERCENT	WIND DATA DIRECTION DEGREES(TN)	WIND DATA SPEED KNOTS
850.0	5048.	15.4	2.2	41.	128.1 10.9
800.0	6720.	10.7	2	48.	149.9 15.0
750.0	8481.	12.3	-4.8	30.	177.6 15.8
700.0	10368.	8.3	-5.2	38.	190.2 15.5
650.0	12359.	3.4	-7.0	44.	191.0 22.9
600.0	14471.	-1.2	-8.8	56.	203.0 32.0
550.0	16731.	-5.7	-16.4	42.	219.4 33.9
500.0	19152.	-12.5	-24.4	36.	225.3 31.8
450.0	21767.	-17.0	-35.5	18.	247.0 21.3
400.0	24624.	-24.6	-41.5	19.	242.5 22.6
350.0	27768.	-31.8	-47.3	20.	238.3 19.7
300.0	31280.	-40.4			

\*\* AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.

GEODETIC COORDINATES  
 32.40175 LAT DEG  
 106.31232 LON DEG

